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EXAMINER

TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No. 09/942,008	Applicant(s) HOSOYA ET AL.	
	Examiner Susy N Tsang-Foster	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-9,11-14 and 16-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5-9, 11-14, and 16-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1745

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to the amendment filed on 11/14/2003. Claims 1, 3, 7, and 12 have been amended. It is noted that in amended claims 1, 3, 7, and 12, the $x=1$ value has been omitted from the general formula for the lithium iron phosphate compound and this change was not marked up in the amended claims. Claims 2, 4, 10, and 15 have been canceled. It is also noted that applicants did not address the obviousness type doubling patenting rejections in paragraphs 10-12 of the previous office action which are reiterated below.

Claims 1, 3, 5-9, 11-14, and 16-18 are pending. Claims 1, 3, 5-9, 11-14, and 16-18 are rejected for reasons of record and for reasons necessitated by applicant's amendment as presented below.

2. The terminal disclaimer filed on 11/14/2003 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Application No. 09/969,220 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Objections

3. Claims 1, 3, 7, and 12 are objected to because of the following informalities:

In claims 1, 3, 7, and 12, the superscripts for unit of density and wavelength are improperly written.

Art Unit: 1745

In claims 1, 3, 7, and 12, "intensity areal" should be "intensity area" since the word "areal" is an adjective.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 3, 5-9, 12-14, 17, and 18 are rejected under 35 U.S.C. 102(a) as being anticipated by the CAPLUS abstract for Prosini et al. "Improved electrochemical performance of a LiFePO₄-based composite cathode", Electrochimica Acta (2001), 46(3), pp. 3517-3523.

The CAPLUS abstract for Prosini et al. disclose a nonaqueous electrolyte cell comprising a lithium iron phosphate based composite cathode. The lithium iron phosphate was synthesized in the presence of 10 weight percent of a high surface area carbon black. The carbon black is a fine carbon powder that reduces the lithium iron phosphate grain size. The carbon is uniformly dispersed between the lithium iron phosphate grains. The discharge capacity is 170 mAh/g

Art Unit: 1745

which is greater than that of any of applicant's examples in Tables 1 and 3 which indicates that the density of the cathode of Prosini et al. must be greater than 2.2 g/cm^3 since the same amount of carbon material is used in the cathode as that of applicants'.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3, 5-9, 11-14, and 16-18 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Barker et al. (US 6,528,033 B1).

Barker et al. disclose a nonaqueous electrolyte cell having a cathode including a cathode active material with the formula LiFePO_4 and a carbon material with a carbon content of 4.7 weight percent based on a molecular weight of LiFePO_4 given as 157 g/mole and assuming complete reaction in example 1 producing 1 mol LiFePO_4 and 12 g of carbon and a powder density of 3.6 g/cm^3 (see Figure 1; col. 7, lines 45-53; and col. 14, lines 15-47; col. 18, lines 36-67). Barker et al. also disclose that during cycling, the x quantity of lithium is released where $0 \leq x \leq 1$ in the case of LiFePO_4 as is also known to one of ordinary skill in the art (col. 2, lines 29-46). The nonaqueous cell also includes an anode including an anode active material, a nonaqueous electrolyte and a separator film and a nonaqueous solution based electrolyte (col. 7, lines 54-65). The separator can also be polymeric electrolyte (col. 13, lines 1-45).

Art Unit: 1745

The method of producing the cathode active material includes providing the starting materials in particle form that comprise of a lithium containing compound, one or more metal containing compounds, a compound capable of providing the phosphate anion, and carbon powder (col. 3, lines 61-67). The starting materials are mixed together with carbon such that the carbon is intimately mixed with the product active material (col. 4, lines 4-25). The starting materials are mixed and dry ground with a ball mill for about 30 minutes and pressed into a pellet (col. 4, lines 30-35) before sintering (heating) the material from 750 to 800 °C in a non-oxidizing atmosphere (col. 6, lines 5-17 and col. 11, lines 5-34).

It is noted that applicants of the present invention added 3 weight % of acetylene black powders based on the entire weight of the fired product (see page 20 of applicant's specification). It is noted that in Barker et al., the carbon material is 6 weight percent of the entire weight of the starting product mixture that is fired which is 100% excess of the carbon used (see col. 14, lines 15-46) such that the fired product must contain at least 3 weight percent carbon (corresponding to the 100% excess).

The cathode prepared contains 85% by weight of active material, 10% by weight percent carbon black, and 5 % by weight binder (col. 18, lines 36-67). It is noted that carbon black is also added to the fired product.

Barker et al. does not explicitly disclose that the carbon material in the cathode is a material that has a Raman spectrum characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak respectively is greater than or equal to 0.30.

Art Unit: 1745

It is noted that the carbon material of Barker et al. was subjected to heating and grinding (ball milling) in the method of making the cathode material as stated above. The carbon material of the prior art was ground by ball milling and sintered at 750 to 800 °C which is similar to the conditions under which the carbon material was treated in applicants' invention as disclosed on page 20 and 21 of the specification. It is noted that applicants added 3 weight % of acetylene black powders based on the entire weight of the fired product (see page 20 of applicant's specification). It is noted that the carbon material is 6 weight percent of the entire weight of the starting product mixture that is fired which is 100% excess of the carbon used (see col. 14, lines 15-46) such that the fired product must contain at least 3 weight percent carbon (corresponding to the 100% excess). Therefore, the carbon material that is sintered in the cathode material of Barker et al. inherently has a Raman spectrum that is characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30. The initial discharge capacity of the battery of Barker et al. is 121 mAh/g (see Figure 2 and col. 19, lines 5-26) which is comparable to the values of the initial discharge capacity of the battery of the instant invention when the ratio of A as defined in the instant claims is greater than 0.3 (see Table 3, page 39 of applicants' specification).

Since the same electrode active material is used, the same amount of carbon, and the same density of the active material is used, and similar discharge capacity is obtained by the battery containing the cathode active material of Barker et al., the carbon material in the cathode of Barker et al. including the carbon black added to the active material is expected to have a Raman spectrum that is characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570

Art Unit: 1745

to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30.

The court has held that claiming of a property or characteristic which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). See also MPEP 2112 and 2112.01. When the Examiner has provided a sound basis for believing that the products of the applicant and the prior art are the same, the burden of proof is shifted to the applicant to prove that the product shown in the prior art does not possess the characteristics of the claimed product. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims 1, 3, 5 and 6 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 of copending Application No. 09/972,375 in view of Barker et al. (US 6,528,033 B1).

Art Unit: 1745

The difference between claim 9 of the copending application and instant claims 1, 3, 5, and 6 is that claim 9 of the copending application does not recite that the carbon material in cathode active material is not less than 3 wt%, and that the carbon material satisfies the condition that the ratio of peak area appearing from 1350 cm^{-1} to 1360 cm^{-1} to the peak area appearing from 1570 cm^{-1} to 1590 cm^{-1} in the Raman spectrum is greater than or equal to 0.30.

Barker et al. teach a battery comprising a cathode comprising 85 wt% LiFePO_4 , 10% by weight carbon black and 5% by weight binder where the carbon black inherently has a Raman spectrum characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 for reasons give above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add 10% by weight carbon black having a Raman spectrum that is characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 to the cathode recited in claim 9 of the copending application because this amount of carbon black having a Raman spectrum that is characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 is effective for increasing the electrical conductivity of the cathode which improves battery performance.

This is a provisional obviousness-type double patenting rejection.

Art Unit: 1745

10. Claims 7-9, and 11-14 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 4 and 10 of copending Application No. 09/961,895 in view of Barker et al. (US 6,528,033 B1).

The difference between claims 4 and 10 of the copending application and instant claims 7-9, and 11-14 is that claims 4 and 10 of the copending application does not recite that the carbon material in cathode active material is not less than 3 wt%, and that the carbon material satisfies the condition that the ratio of peak area appearing from 1350 cm^{-1} to 1360 cm^{-1} to the peak area appearing from 1570 cm^{-1} to 1590 cm^{-1} in the Raman spectrum is greater than or equal to 0.30.

Barker et al. teach a battery comprising a cathode comprising 85 wt% LiFePO_4 , 10% by weight carbon black and 5% by weight binder where the carbon black inherently has a Raman spectrum characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 for reasons give above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add 10% by weight carbon black having a Raman spectrum that is characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 to the cathode recited in claims 4 and 10 of the copending application because this amount of carbon black having a Raman spectrum that is characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the

Art Unit: 1745

peak area of the second peak is greater than or equal to 0.30 is effective for increasing the electrical conductivity of the cathode which improves battery performance.

This is a provisional obviousness-type double patenting rejection.

11. Claims 1, 3, 5, and 6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 8 (previously claim 9 of U.S. Application No. 09/972,395) of U.S. Patent No. 6,656,635 (previously U.S. Application No. 09/972,395) in view of Barker et al. (US 6,528,033 B1).

The difference between claim 8 of U.S. Pat. No. 6,528,033 and instant claims 1, 3, 5, and 6 is that claim 8 of the U.S. Patent does not recite that the carbon material in cathode active material is not less than 3 wt%, and that the carbon material satisfies the condition that the ratio of peak area appearing from 1350 cm^{-1} to 1360 cm^{-1} to the peak area appearing from 1570 cm^{-1} to 1590 cm^{-1} in the Raman spectrum is greater than or equal to 0.30.

Barker et al. teach a battery comprising a cathode comprising 85 wt% LiFePO_4 , 10% by weight carbon black and 5% by weight binder where the carbon black inherently has a Raman spectrum characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 for reasons give above.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add 10% by weight carbon black having a Raman spectrum that is characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the

Art Unit: 1745

peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 to the cathode recited in claim 8 of the U.S. Patent because this amount of carbon black having a Raman spectrum that is characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 is effective for increasing the electrical conductivity of the cathode which improves battery performance.

Response to Arguments

12. Applicant's arguments filed 11/14/2003 have been fully considered but they are not persuasive.

Applicant asserts on page 8 of the amendment that neither Prosini et al. nor Barker et al. disclose a carbon material with an intensity area appearing in a number of waves of 1350 to 1360 cm^{-1} and an intensity area appearing in the number of waves of 1570 to 1590 cm^{-1} in the Raman spectrometry being D and G respectively, an intensity area ratio A of D to G is ≥ 0.30 and that the examiner is requested to refer to Comparative Example 10 and Example 16 which evidence that although two similar methods can be used to produce the carbon active materials, the resultant materials have very different characteristics.

By way of background, the specification of the present application on page 9 states that the D peak appears when the structure of the carbon material is distorted and the structural symmetry is lowered. The specification also states on page 10 that graphite is a crystalline carbon material and is destroyed in its structure by pulverization using a powerful crusher such

Art Unit: 1745

as a planet type ball mill to undergo amorphization which as a result the intensity ratio A (D/G) is increased. The specification also states on page 15 that amorphous carbon materials such as acetylene black may be preferentially used and page 18 of the specification states that the sintering temperature is preferably 400 °C to 900 °C.

It is noted that the starting carbon material for comparative example 10 and Example 16 each have different value of A to begin with prior to adding the carbon material to the cathode active material even though similar sintering conditions may be used after adding the carbon material. When sintering does not take place above 900 °C, the carbon material does not become more crystalline and therefore the value of A is not expected to decrease. In Example 16 of applicant's specification on page 38, a carbonaceous material having an intensity area ratio A (D/G) of 0.30 was added, in place of the acetylene black following the procedure in Example 3. The value of A of 0.30 indicates that the carbon material is amorphous. Example 3 follows the procedure of Example 1 where acetylene black powders was added to the starting materials for lithium iron phosphate and then the mixture was fired for five hours at a temperature of 600 °C in a nitrogen atmosphere to produce the LiFePO_4 composite carbon material (see pages 20-21 of applicant's specification). When sintering occurs below 900 °C or at 600 °C, the carbon material is expected to stay amorphous with a value of A being equal to or greater than 0.30.

In contrast, in comparative example 10, a carbonaceous material having an intensity area ratio A (D/G) of 0.26 was added in place of the acetylene black. Thus, the carbonaceous material in comparative example 10 is already crystalline to begin with and not amorphous. Comparative example 10 follows the procedure of example 3 which follows the procedure of

Art Unit: 1745

example 1 of sintering the carbon material at 600 °C which would not decrease the crystallinity of the carbon material and the value of A is not expected to increase after the sintering step.

Applicant has not provided experimental evidence that the carbon material of Barker et al. do not have an intensity area ratio A of D to G that is equal to or greater than 0.30. As stated above, Barker et al. disclose a method of producing the cathode active material that includes providing the starting materials in particle form that comprise of a lithium containing compound, one or more metal containing compounds, a compound capable of providing the phosphate anion, and carbon powder (col. 3, lines 61-67) and the starting materials are mixed together with carbon such that the carbon is intimately mixed with the product active material (col. 4, lines 4-25). The starting materials are mixed and dry ground with a ball mill for about 30 minutes and pressed into a pellet (col. 4, lines 30-35) before sintering (heating) the material from 750 to 800 °C in a non-oxidizing atmosphere (col. 6, lines 5-17 and col. 11, lines 5-34). Ball milling the mixture would distort the crystal structure of the carbon material and cause it to become more amorphous and would inherently have an A value that is greater than or equal to 0.30. This method is similar if not identical to that disclosed in applicant's specification on page 20-21. As stated by the present applicant on page 15 of the specification, even a crystalline graphite material may be destroyed in its structure by crushing with a powerful crusher such as a planetary ball mill and is thereby amorphized such that the intensity area ratio A (D/G) is correspondingly increased.

Barker et al. also disclose Shawinigan Black which is acetylene carbon black as an example of carbon powder that is added to the starting materials to synthesize a cathode active material (col. 17, lines 35-40). Acetylene carbon black (which is also used by applicant of the

Art Unit: 1745

present application in example 3) is an amorphous carbon material that inherently would have an A value that is greater than or equal to 0.30 and sintering below 900 °C would not decrease this A value. Sintering at a temperature of 600 °C would not increase the A value of acetylene carbon black.

Furthermore, Barker et al. teach a battery comprising a cathode comprising 85 wt% LiFePO_4 , 10% by weight carbon black and 5% by weight binder where the carbon black inherently has a Raman spectrum characterized by having a peak at 1350 to 1360 cm^{-1} and a peak at 1570 to 1590 cm^{-1} such that the ratio of the peak area of the first peak to the peak area of the second peak is greater than or equal to 0.30 because carbon black is an amorphous carbon material.

With respect to Prosini et al., it is noted that 10 weight percent high surface area carbon black which is an amorphous carbon material is added during the synthesis of the lithium iron phosphate and inherently would have an A value equal to or greater than 0.30. Applicants have not experimentally shown that the cathode of Prosini do not inherently possess the claimed characteristics.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Art Unit: 1745

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (571) 272-1292.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/ *Susy Tsang-Foster*

Susy Tsang-Foster
Primary Examiner
Art Unit 1745